

## EGGS OF AMPULLARIA IN JAMAICA

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In July, 1932, *Ampullaria* was found in the parishes of Hannover, Westmoreland and St. Catherine in the west and central parts of the island of Jamaica, B. W. I.<sup>1</sup>

The first locality was in the Great River above the bridge at Lethe and just below ruins of an old dam: here, on July 9th, a single living *Ampullaria* was found under a large piece of rough limestone in mid-stream in water more than two feet deep, rushing rapidly and turbid. *Hemisinus lineolatus* was abundant near the top of stones and there were many *Nerita alticola* Pilsbry down deeper. The statements of a native living there leads one to suppose that *Ampullaria* may be abundant and easily obtained under stones when in dry seasons the water is low. This species is *Ampullaria fasciata* Roissy. In the condition of the river when seen both on the seventh and ninth there seemed no suitable places for the deposition of eggs.

The second locality was a peculiarly clear and rapid small stream apparently of constant flow, spoken of as part of Fresh River but evidently what is designated as Sweet River on maps. Here on July 14th several *Ampullaria* were taken from the bottoms of large rough stones of lime rock in water near waist deep in strong current as well as near shore amongst trash lodged in corners. As many as seven *Ampullaria* were found concealed and protected in cavities of the under side of one large stone.

*Hemisinus lineolatus* was abundant here near the surface and deep under stones were a few small dull *Neritina virginea* with their egg capsules.

None were visible at the surface but must be searched for upon submerged objects. Some empty shells were on shore

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<sup>1</sup> These observations were made when in Jamaica to make an investigation aided by a grant from The National Research Council. The specimens mentioned are in the possession of The Academy of Sciences of Philadelphia and the species have been determined by Dr. Henry A. Pilsbry.

and some had apparently been broken at the apex and eaten out by rats or other animals; others were intact, but empty. Conspicuous egg clusters recalling lizard eggs in size and color were common on the stems and leaves of plants sending their two-feet long leaves up out of the water edge on stalks two feet high. One onlooker thought these were the eggs of frogs but another said they were eggs of snails; but also believed that small floating *Azola* was the seed of water-cress growing near by. Some of the eggs broken open were little advanced, others revealed well formed *Ampullaria* young; one in each; others had hatched.

These *Ampullaria* eggs were several to eighteen inches above the water so that the animals had crawled up that distance to lay the eggs in the air, the water level being apparently constant. Each cluster is of vertical rows generally two, sometimes three rows side by side with about seven in each row. Apparently the eggs are laid in pairs, right and left eggs being packed to make staggered series in two parallel rows. Each egg when advanced is somewhat elongated, being from  $3\frac{1}{2}$  by 4 to  $4\frac{1}{2}$  by 5 mm. Similar egg clusters were figured from the Florida Everglades by W. K. Brooks for *Ampullaria depressa* Say. but in that illustration the eggs, as found attached to reeds and grasses two to three inches above the water, are in at least five parallel vertical rows each of seven eggs in most rows.

These specimens prove to be the *Ampullaria gossei* Reeve, named from specimens got by Gosse, who found several *Ampullaria* alive with many egg clusters in a little rapid stream called Sweet River. He says the eggs "are laid for the most part in a double row, attached by a glutinous substance to the stalks and leaves of plants overhanging the water, but not immersed. The eggs are oval, shelly, pure white and nearly as large as sweet peas." He found the contents of some eggs well developed embryos with shells and opercula, while other eggs had not formed embryos.

Doubtless Sweet River of Gosse is the present Sweet River in which *Ampullaria* is found in 1932 and the exact region near the main road may well be the same that Gosse could so

easily find going from Bluefields, where he lived more than a year, to the nearest town, Savanna la Mar.

We infer the laying season is a prolonged one since Gosse found old and young stages April 5th while we found the same July 14th. The persistence of *Ampullaria* in this seemingly constant environment for 87 years is in strong contrast to the changes found in the *Neritina* fauna of many Jamaican rivers and ponds. On the main road near this locality we now note the 112 mile-stone reckoning from Spanish Town. As this species was apparently first found in this river and possibly may be restricted to it, it is of interest to note the peculiarity of the river's course and origin. It is variously represented on different maps, but on the Public Works maps by Colin Liddell, 2,698 miles to inch, 1888, corrected to 1926, the river emerges from a swamp near the ocean is three parallel little rivers, of which the *Ampullaria* locality is the western-most; they run about a mile each across great pastures to be joined by a small river from the hills and then to continue westerly and thence back again toward the sea which the combined river finally enters four miles from the apparent origin in the swamp. Possibly the waters of the swamp owe their origin to the Deans Valley River that vanishes in a sink scarce two miles to the northward of the swamp?

The third locality for *Ampullaria* and its eggs was found July 15th along the main road from Spanish Town to Bog Walk where some two miles out it crosses the Government Rio Cobre Irrigation Canal flowing on the right of the road some two miles from the great dam across the Rio Cobre, and before the canal branches into its forty-five miles of distribution. Here the canal is deep, wide, swift and turbid so that no *Ampullaria* were seen, but on the smooth cement retaining walls above the bridge many conspicuous white clusters of eggs showed that *Ampullaria* must be present as in some eggs the well formed *Ampullaria* were found. However, men working along the canal and people living in houses by its bank knew nothing of such shells, and the short handled net failed to produce any. A few empty shells were found

on the shore and finally deep down under base of cocoanut tree on waters edge above bridge several living *Ampullaria fasciata* Roissy, were found and more below the bridge in small side ditches.

Egg clusters were also abundant upon the cement abutment of the bridge, Figure 2. These egg clusters seemed longer than those of *A. gossei* and more thickly crowded due to their being spread out upon one surface and not scattered here and there upon separate leaf stalks as in *A. gossei*. The clusters stood from one to fifteen inches above the water level which seemed to be generally constant and were often but a few inches apart. Some fifty clusters are represented in the area shown in Figure 2, each made of two or sometimes three parallel rows of seven or more eggs laid as in pairs and packed rather regularly side by side with many interruptions or exceptions. The egg rows run prevailingly nearly vertical. In some clusters the same number of eggs run all in one long zigzag row as if made of the usual two rows of seven to ten or so now laid singly. There seems a tendency to lay usually one egg left and one right with slow progression so that the two are packed diagonally side by side; but sometimes with more rapid progression the eggs may lie more nearly in one straight line.

These eggs were in different stages of development, in some clusters being advanced to well-formed shells.

As this canal comes from the Rio Cobre River search was made for *Ampullaria* in that river above and below the bridge spanning it about two miles above the canal mouth but none were found; yet Dr. Pilsbry records this species as having been found at Bog Walk which is three or four miles further up the river where the large branch, Rio Pedro, enters from the east. Search along this branch to the east was also without success.

#### REFERENCES

- 1851. Gosse, P. H. A Naturalist's Sojourn in Jamaica. London.
- 1908. Brooks, W. K. and Bartgis, McGlone. The origin of



- the lung of Ampullaria. Papers from the Tortugas Laboratory, Carnegie Institution of Washington, pp. 97-103, pls. 1-7.
1927. Pilsbry, H. A. A revision of the Ampullaridae of Jamaica and Cuba. Proc. Acad. Nat. Sci. Phil., LXXXIX, pp. 247-253, pls. XXL-XXLI.

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OBSERVATIONS ON STAGNICOLA KINGI (MEEK),  
LIVING AND EXTINCT

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When R. Ellsworth Call in 1884 described his *Lymnaea utahensis* he undoubtedly had living specimens from Utah Lake, for he lists it among the recent Mollusca of the Bonneville Basin and refers to its dentition as differing "very materially" from that of *Radix ampla*, of which he regarded it as a variety. No subsequent collector, however, has heretofore recorded finding it alive, in spite of repeated searches, and the question has often been raised in recent years as to whether it may not have become wholly extinct. The answer was definitely given several years ago when the writer with a party of students found it still living in numbers in Utah Lake. It has since that time been taken by us whenever desired at the same locality.<sup>1</sup>

This locality is a stretch of shore about a quarter of a mile long on the west side of the lake a short distance south of the promontory locally known as Pelican Point. Here a number of springs empty into the lake, some of these bubbling up through the mud under the water, others arising near or above the water level. The snails were found in the springs and along the currents of fresher water flowing from them, many occurring under submerged or partially submerged rocks. They were not found living except in these places in and adjacent to the springs, indicating that the

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<sup>1</sup> More recently we have also taken living specimens of *S. kingi* from Conner's Spring, north of Great Salt Lake, agreeing in all essential features of radula and shells with the Utah Lake form.